

Aggressive Behaviour in Adult Slot-Machine Gamblers: A Qualitative Observational Study

Adrian Parke and Mark Griffiths
Nottingham Trent University, United Kingdom

Published online May 2, 2005

Gambling is acknowledged to have many negative effects on the individual. However, from a psychological perspective, aggression as an outcome of gambling has been overlooked. This paper investigates the dynamics of the relationship between aggression and slot machine gambling. A non-participation observation study observed a small group of aggressive individuals ($n = 8$; identified in a previous study) over a period of eight weeks. Four categories of aggressive behaviour were confirmed from previous research (verbal aggression towards the gambling arcade staff; verbal aggression towards the slot machines; verbal aggression towards other slot machine players; and physical aggression towards the slot machines). From the in-depth observations, possible reasons motivating these types of aggressive behaviour are discussed. It is suggested that the frustration, guilt and embarrassment of losing are the prime causes of such aggression.

Keywords: Slot-machine gambling; Aggressive behaviour; Problem gambling; Qualitative study; Non-participant observation.

Introduction

Gambling is acknowledged to have many negative effects on individuals, their significant others and, more indirectly, on society as a whole. It appears from a psychological perspective, that aggression as an outcome of gambling has been overlooked. Historically, there have been occasional references to gamblers inflicting domestic violence on their spouses (e.g., [Lorenz & Shuttlesworth, 1983](#)), but aggression has not been the focus of the study. More recently, [Muelleman, DenOtter, Wadman, Tran, and Anderson \(2002\)](#) found that *intimate partner violence* (IPV) was predicted by pathological gambling in the perpetrator. After adjusting for age, education and ethnicity, logistic regression showed that a woman whose partner was a problem gambler was 10.5 times more likely to be a victim of IPV. More recently in the US, the [National Coalition Against Legalized Gambling \(2003\)](#) reported that with the opening of casinos in South Dakota that

year, child abuse and domestic assaults rose by 42% and 80%, respectively. This was attributed to the increase in casino gambling.

The present authors also carried out a small non-participant observation study of aggressive behaviour in gamblers ([Parke & Griffiths, 2003](#)). They monitored the incidence of aggressive behaviour in 303 slot machine players over four six-hour observation periods in a UK amusement arcade. Results identified four types of common aggressive behaviour. These were:

- (1) *Verbal aggression towards the gambling arcade staff:* Typically, this involved swearing at staff after a player had lost money on the machine with the staff member being in close vicinity (10.7% of aggressive incidents);
- (2) *Verbal aggression towards the slot machine:* Typically, this involved cursing the machine after losing money or the machine not giving them what they expected and/or predicted (38.2% of aggressive incidents);
- (3) *Verbal aggression towards other slot machine players:* Typically, this involved gamblers verbally castigating other players particularly if they thought the player was waiting to play on their machine (13.5% of aggressive incidents); and

Correspondence concerning this article should be addressed to Mark Griffiths, Psychology Division, Nottingham Trent University, Burton Street, Nottingham, NG1 4BU, United Kingdom. E-mail: mark.griffiths@ntu.ac.uk.

- (4) *Physical aggression towards the slot machines*: Typically, this involved players hitting or kicking the machine, or throwing something at it (37.6% of aggressive incidents).

Parke and Griffiths (2003) concluded that aggression was prevalent in the UK gambling arcade environment with an average of seven aggressive incidents per hour. They also noted that all of the aggressive incidents originated from just nine slot machine gamblers.

Fundamentally, there are two main types of aggressive act that could be prevalent in slot machine gambling: *Instrumental aggression* and *emotional aggression*. Instrumental aggression differs from emotional aggression because there is an ulterior motive behind the act, whereas emotional aggression is the result of being unpleasantly aroused. The *frustration-aggression theory* (Dollard, Doob, Miller, Mowrer, & Sears, 1939) hypothesizes that emotional aggression is generated when there is a barrier to expected goal attainment. Furthermore, the level of aggression is directly proportional to the (a) level of satisfaction they had expected; (b) the frequency with which they are prevented from achieving any of their goals; and (c) the frequency with which their attempts are resisted. Berkowitz (1989) maintains that it is not the frustration that causes the aggressive urges, but the negative affect elicited by the frustration.

When playing UK slot machines, gamblers have an expectation of receiving a predetermined pay out percentage (a minimum of 72%, as regulated by UK law). A gambler's knowledge of this will affect their level of anticipation. For example, an experienced gambler knows that the payout percentage operates over 10,000 plays. However, even novice gamblers expect the more money they put in, the greater the chance they will receive money if the slot machine has not paid out. It is therefore hypothesized that the level of aggression is directly influenced by the level of anticipation. For example, a gambler who has put £50 into a slot machine should be more frustrated with winning nothing, than a person who has put in only £5.

To summarize, it is hypothesized that the structural characteristics of UK slot machines may cause gamblers to experience aggressive urges. Because slot machines in the UK are operated using a known payout ratio (rather than a random-number generator, as used in the US and elsewhere), gamblers are given the ability to influence their probability of success. In effect, this requires the gambler to target slot machines that have not paid out according to the known payout ratio. Slot machine arcades thus become highly competitive environments, with gamblers vying with one another to play slot machines that are operating below their payout ratio.

In this study, aggression is defined as an act, either physical or symbolic, which is carried out with the intention to harm an organism or organism surrogate (Berkowitz, 1993; in this case arcade staff, other gamblers and/or a slot machine may constitute a surrogate). The importance of this research lies in the hypothesis that aggressive urges elicited through gambling on slot machines will curb an individual's everyday functionality. Primarily the gambler may experience strong negative affect after losing. The *excitation transfer theory* (Zillman, 1988) postulates that arousal in one situation can persist and intensify emotional reactions occurring in later situations. When this occurs, the individual fails to recognize that the level of anger experienced is caused by residual arousal from the previous situation. In effect, when the gambler leaves the gambling environment in an aggressive mood they may experience a cognitive deficit in which they can no longer evaluate subsequent situations accurately and perceive their current frustration level to be solely attributable to the present situation. This transfer of aggressive arousal probably only exacerbates tension and stress induced by the financial implications of gambling. It is highly probable that if the individual cannot restrain aggressive urges in a public slot machine arcade environment, the individual may lack self-control and, because of this, there is a possible risk that the individual may inflict harm to themselves or to others.

The study to be reported here monitored eight aggressive gamblers identified in a previous study as being aggressive (Parke & Griffiths, 2003). As this was an exploratory qualitative study there were no specific hypotheses. The only objective of this pilot field study was to record the antecedents and consequences of each category of aggressive behaviour identified in the previous observational study by the authors (i.e., verbal aggression towards the gambling arcade staff; verbal aggression towards the slot machines; verbal aggression towards other slot machine players; and physical aggression towards the slot machines).

Methods

Design

Parke and Griffiths (2002) have outlined how difficult slot machine gamblers are to research because of player-specific factors, researcher-specific factors and external factors. To ensure validity of the data collected, non-participant observation was employed. Eight participants (see the Participants section below for more details) were selected for in-depth observation over an eight-week period based on their frequency of gambling and aggressive actions observed in a previous study by the authors (see Parke & Griffiths, 2003).

Procedure

Non-participation observation was employed to record data on aggressive behaviour displayed in the slot machine environment. The first author gained employment as a gambling arcade supervisor in a large working class city centre gambling arcade. This was done to maximize ecological validity and to minimize the effects caused by the presence of a researcher. At the time of the study, the gambling arcade housed 54 slot machines. The size of the arcade was approximately 20 × 80 ft. This meant a high density of both gamblers and slot machines in the arcade. The arcade supervisor had to walk around the establishment specifically looking for people who were being disruptive. As a consequence of the role, nearly all acts of aggressive behaviour were easily noted by the first author. The first author carried a notebook and—because of engrossment in the gambling activity—could inconspicuously record data. The participants were comfortable being constantly observed by the arcade supervisors, therefore the presence of the researcher as a member of staff should have had no effect on their natural behaviour.

During a previous observational study, eight male slot machine gamblers engaged in more aggressive behaviour than other players. These were selected for further in-depth observational analysis. The participants were observed in the arcade over an eight-week period. Whenever possible, the participant’s gambling

behaviour was recorded in an attempt to assess the antecedents and consequences of the aggressive behaviour. The first author also interacted with the participant (where applicable), to ask questions about participant’s gambling behaviour. The participants were only questioned when it seemed non-intrusive to do so. Data were collected using written notes and a coding scheme designed during pilot work (see [Appendix](#)). It was commonplace for the arcade staff to carry and use notebooks when they were working. If more than one of the selected participants were gambling simultaneously, a decision was made which to observe based on which gambler appeared to be the most animated (e.g., aggressive, frustrated, chasing their losses, etc.). All of the participants were made aware that the first author was carrying out gambling research, and the participants each gave their consent to be part of the research. However, the participants were told that the focus of the research was on mood states in gambling rather than aggression specifically.

Participants

The participants consisted of eight UK adult male slot machine gamblers who frequented the arcade regularly, and who had already exhibited aggressive behaviour in a previous observational study by the authors. The participants were therefore a self-selecting sample. They are numbered *P1* (participant 1) to *P8* (participant 8) in the results section. Participants disclosed

Table 1
Demographic Information of Participants (n = 8).

Participant	Estimated Age	Other Demographic Information
P1	55-60 years	British male. Has been playing slot machines for over twenty years. In 1997 he was released from a ten-year prison sentence for an armed robbery on a building society.
P2	30-35 years	Male. Originally from Greece and is now a British citizen. He works nightshifts in a “cake factory.”
P3	30-35 years	Male. Did not specify his nationality, but appeared to be of Mediterranean origin. He works in a fast-food establishment.
P4	22-26 years	British male (of Asian ethnicity; Pakistan) and is a non-practising Muslim. He is unemployed but is a self proclaimed “professional gambler.” He left his university degree course in the first semester after an enormous winning streak while gambling. Claims he does not need a degree because he can achieve a comfortable living standard through gambling.
P5	25-30 years	British male (of African ethnicity). He works full time in construction and also as a “freelance handyman” in his spare time. Has admitted that his wife left him, taking his two daughters, on account of his gambling problem.
P6	27-32 years	British male (of Asian ethnicity). Works a chef in public house and lives with his long-term partner. He was imprisoned in the mid-1990s for selling stolen goods and released in 1999.
P7	32-37 years	British male (originally from Scotland). He works as a labourer.
P8	30-35 years	British male (of Caribbean ethnicity). He is unemployed, although he claims to be a “hustler” selling stolen goods such as mobile phones. Has a long-term partner and a young pre-school daughter.

biographical information to the researcher throughout the observation period. A summary of known demographics is outlined in Table 1.

Ethics

Ethical standards of this study regarding participant consent were in coherence with the British Psychological Society's (2000) Code of Conduct, Ethical Principles and Guidelines. Article 4.3 (b) states that when obtaining consent, and it is deemed necessary to withhold full information of the study to sustain objectivity that the researcher must "Ensure that participants are provided with sufficient information at the earliest stage" (British Psychological Society, 2000, p. 10). Participants were fully informed of the first author's research credentials and that the study involved investigating the relationship between slot machine gambling and participant's mood. Both positive and negative affective dispositional data were collected in the study. Placing emphasis on aggression and negative affectivity while obtaining consent may have affected the objectivity of data collected.

Results

The eight participants were monitored by the first author over an eight week period and examined more closely each of the four types of aggression identified in a previous study: (a) verbal aggression towards the gambling arcade staff; (b) verbal aggression towards the slot machines; (c) verbal aggression towards other slot machine players; and (d) physical aggression towards the slot machines. Each section below outlines a summary of the main findings followed by specific examples of the sub-type of aggressive behaviour. Since the data are qualitative nature, observations are accompanied by some initial discussion before a more general discussion later in the paper.

Verbal Aggression Towards the Arcade Staff

Verbal aggression to the arcade staff was most prevalent when the gambler thought that an arcade staff member was going to financially benefit from their losses, or when they felt that arcade staff were amused by their gambling behaviour. The participants were often wary about appearing foolish to the arcade staff. Self-esteem appears to be important for the gambler. Therefore, when losing (which is perceived by the gambler as demonstrating poor skill), the players became defensively aggressive. In addition, verbal aggression towards the staff members was common when the gambler thought arcade staff to be acting unfairly. Unfair behaviour was any act which was perceived by the gambler as preventing them from maximizing their play, such as by lowering the payout percentage, or by

giving opponents hints about game play or machine selection. Typical examples included the following incidents:

Example 1.1. After incurring considerable losses, P1 was changing money and in an aggressive manner said to an arcade staff member, "Now this is the last of my money you are fucking getting!"

Example 1.2. P3 tried to use a counterfeit £10 note to get change to play on the machines, and had it torn in half by a member of arcade staff. He then produced a genuine £10 note and said both aggressively and sarcastically, "You sure you don't want to rip this fucking one up...is it ok for you? Great...fucking great...I am pleased."

Example 1.3. After incurring heavy losses gambling, P3 aggressively says to an arcade staff member, "You have everything mate...everything...are you pleased?...everything in this piece of shit machine."

Example 1.4. P1 becomes verbally aggressive when he is prevented from using the staff toilet. He said, "You think with the amount we put in you could provide a fucking toilet...Is it too much to ask?"

Example 1.5. After incurring very heavy losses, P1 aggressively accuses an arcade staff member of tampering with the machine to alter the payout ratio, "Have you had your screwdriver out this morning, doing a little tweaking?"

Example 1.6. After losing all his money gambling, P6 becomes verbally aggressive and said to an arcade staff member, "I should bring a bat into this place and break the fucking machine...What would you do?...You're barred! You wouldn't have the balls to call the police ...getting barred from this place would be fucking great...I'd have some money then wouldn't I?"

Example 1.7. When an arcade staff member helped and gave advice to a fellow gambler in playing a particular machine, he shouted aggressively over to the staff member "Hey that's my cheat, don't tell everyone about it...is that why these machines are always empty?"

Example 1.8. P1 asked an arcade staff member which machines had not paid out recently. When the staff member refused to tell him anything, he became verbally aggressive and said, "I'll give you some advice chap, never be smug cause you never know when you are going to look like a muppet¹."

¹ United Kingdom colloquialism for an individual who is extremely stupid.

Verbal Aggression Towards the Slot Machine

Verbal aggression towards the slot machine usually consisted of swearing or cursing at or to the slot machine. When losing, the gamblers gave the slot machine socially undesirable human character defaults. Such personification of the slot machine has also been noted by other researchers (e.g., Griffiths, 1994). The most common criticism was that the slot machine cheating the gambler. Gamblers accepted some losses as inevitable as they are fully aware that slot machines are designed to make money. However, they also believed they were “owed” a reasonable percentage of money that they had put in. The slot machine gamblers therefore became verbally aggressive when they thought the machine was paying out significantly below the expected payout percentage. In essence, the source of their aggression was the frustration related to the unjust pre-programmed nature of the slot machine. For instance, some typical examples:

Example 2.1. After losing on a particular machine the previous week, P1 began to lose on the same machine the following week and aggressively says of the machine “This bitch is fucking me around...Are you going for fuck me around again this week?”

Example 2.2. After unsuccessfully completing a gamble using the ‘skill’ button, P6 tells the machine that he completed it accurately, but the slot machine is cheating him. He tells the machine in a very verbally aggressive way, “You see that?...I got it didn’t I? Cheating piece of shit...Cheating bitch!”

Example 2.3. P2, who had lost approximately £60 and was consistently getting “bad beats” (unexpected losses) on one of the machine’s gamble features, aggressively said to the machine. “Oh, you sick fuck.”

Verbal Aggression Against Other Slot-Machine Gamblers

Verbal aggression towards other gamblers was most prevalent when the gambler thought gamblers around him were intending to profit from their losses. Slot machine gamblers expect machines to pay out if large amounts of money have been put in and the machines have not recently paid out. For a player who runs out of money or who has to leave the arcade, this creates opportunities for predatory gamblers (known as *sharks*²) to select machines which they believe are due to payout (Parke, Griffiths, & Parke, 2003). Sharks will watch how much money other gamblers have put into the machine hoping that they can recoup other gambler’s money. If the gambler who has lost all of their money feels that the shark has been observing

and targeting them, perceiving the act as a deliberate competitive strike, the “victim” (i.e., the gambler who has stopped playing) may experience aggressive urges against the opponent.

The other reason for verbal aggression towards other gamblers was based on the irritability of the person gambling (i.e., emotional aggression). Most of the verbal aggression was targeted to the sharks that were being obvious in what they were doing (i.e., those who were least skilled at concealing their predatory behaviour). The level of verbally aggressive behaviour appeared to be influenced by three factors: (a) the amount of money put in the machine; (b) the level of perceived competitive behaviour of the shark; and (c) how much profit the shark was obtaining from the machine at the expense of the gambler. The following incidents provide a couple of relevant examples:

Example 3.1. P3 had gambled all his money on the slot machine. He thought the machine was about to pay out and wanted the machine not to be played on by others while he went to get more money. One of the arcade staff agreed to ‘save’ the machine for a short period of time until he returned. P3 did not return within the agreed time limit and the machine was released for other gamblers to play on. P4 began to gamble on it and win. P3, while watching P4 win on “his” slot machine said to P4 aggressively, “You watching me lose my money before...wait till I lose everything and then play mate.”

Example 3.2. P1 was gambling and losing money. Beside him was a group of foreign asylum seekers who were watching their friend play the adjacent slot machine. P1 told a racist joke to an arcade staff member in a loud voice so that the asylum seekers could hear, “I saw on the news last night there was this guy who the police caught, he was pouring petrol all over these asylum seekers...he said he was trying to get ten to the gallon.” Later on, the foreigners were asked to leave the arcade because they had stopped playing the machines. P1 then shouted over aggressively to the arcade staff member, “You get them away from me, they want this machine.”

Physical Aggression Towards the Slot Machine

Physical aggression towards the slot machine most frequently occurred when the player experienced a *near miss*,³ or when the player perceived the slot machine to

² *Shark* is a colloquial term for a gambler who actively targets slot machines that they think have not paid out what is due (based on the payout percentage).

³ A *near miss* occurs when a gambler almost wins; how close the near miss is to winning affects its potency. On slot machines, there can be near misses on the win line, the feature trail, or the feature board (Griffiths & Parke, 2003).

be operating unfairly. The amount of money put into the machine indirectly influenced aggression level by affecting the level of anticipation of rewards experienced by the gambler. Perception of whether the slot machine was acting unfairly was based on whether the gambler felt the slot machine was operating in line with the known payout ratio. The gamblers were rarely verbally or physically aggressive towards the machines until they had gambled (and lost) considerable amounts of money. (What was deemed “considerable” clearly differed for each gambler.) Some examples of physical aggression include:

Example 4.1. When P6 did not get the opportunity to complete a skill feature he accused the slot machine of cheating. As a consequence, P6 kicked the base of the machine very hard.

Example 4.2. In another instance P8 (after losing £300 on a slot machine) grabbed a nearby metal bin and broke the glass screen of the slot machine.

Example 4.3. After considerable losses P8 hit the machine’s play button very hard. Each time he experienced a near miss at the top of a feature board, he kicked the base of the machine.

Example 4.4. After a “near miss,” P7 was physically aggressive to the slot machine. P7 put another pound in, and every time he had a near miss he slammed the screen of the slot machine very hard.

Other Important Observed Behaviours

In addition to observing physical and verbal aggression, the first author also recorded other potentially relevant observations that may relate to aggressive behaviour. Initial pilot work had indicated that general mood states may be important antecedents, so the first author monitored the perceived mood states of the gamblers. These data highlighted that there were three common situations in which the gamblers experienced very positive mood states. These were when gamblers (a) entered the arcade and before they had begun to gamble, (b) won back some of their losses, and (c) employed positive thinking strategies. Here are some examples taken straight from the first author’s observational notes:

Example 5.1. “P4 comes in with P6... Both seem in positive moods...They are talking about their friends and going out that weekend.”

Example 5.2. “P1 enters the arcade. Pleasant, appears in good mood. (He is) excited about game [a football match] tomorrow.”

In relation to winning back their losses:

Example 6.1. P2 had lost about £60 but eventually won £50 back. P2 says, “Yeah that one is good fun. Hey keep me out of here though, those things [slot machines] are dangerous.” P2 leaves in a good mood.

Example 6.2. After becoming very irritated by people he believed wanted “his” machine when he began to lose (see example 3.2), P1 eventually won his money back and says to the first author, “Up £10. That’s what you’ve got to do mate. Makes up for some I lost during the week. Win some, lose lots. See you later mate.” P1 leaves in an upbeat mood.

In relation to positive thinking strategies (such as those outlined by [Parke et al., 2003](#)):

Example 7.1. After losing £100 P1 said to the first author, “It’s only money though, I’ve had my wedge [fill of gambling] and that’s what I’ve come in for.”

Example 7.2. After watching another player winning on the slot machine that he had lost all his money, P3 said as he was leaving, “It’s only a few hundred [pounds]. Means nothing to me you know?”

Example 7.3. While cashing up P5 checked his wallet and realized how much he had just lost, “Shit, didn’t realize how much I’m down. Suppose I’ve been here from nine [9am, it is now 1pm]. Passed the day anyway I suppose.”

Discussion

The data presented here confirm the previous observations by the authors ([Parke & Griffiths, 2003](#)) and that the gamblers engage in a variety of aggressive behaviours (both verbal and physical). In assessing verbal aggression towards the arcade staff it can be concluded that the behaviour is most likely a form of emotional aggression ([Berkowitz, 1993](#)). This is because the verbal aggression towards the arcade staff appeared to be motivated by frustration rather than achieving an objective. While experiencing negative affect, the gamblers targeted a perceived perpetrator. In these cases, the gamblers are responsible for losing their money but they do not like to accept liability for their actions. In such aggressive acts it appears the gamblers may be using defence mechanisms, such as projection and displacement ([Freud, 1946](#)) to deflect the realization that they themselves are responsible for their negative affect. The gamblers look at who benefits from their losses, and since the arcade owners are rarely present, they

look for a surrogate in the arcade floor staff, other gamblers, and/or the slot machine itself.

The results showed it was common for the gambler to perceive the arcade staff as profiting financially or being amused by the gambler's losses. One participant (P1) actually questioned whether a staff member had programmed the slot machine not to give out any wins (see [Example 1.5](#)). This suggests that part of the verbal aggression is emotional. Furthermore, much of the verbal aggression towards the arcade staff was in the form of non-gambling complaints. Again, this suggests that the aggressor's acts have no purpose other than as a way to vent frustrations.

Verbal aggression towards the arcade staff can be understood in relation to the frustration-aggression theory (Berkowitz, 1989, 1993). If the gambler believes that the staff member is acting unfairly or putting the gambler at a disadvantage, then such acts could be construed as interference which prevents them from achieving their expected level of satisfaction. The frustration-aggression theory hypothesizes that aggression levels increase proportionately to the level of interference and the frequency of the staff member causing interference. For example, P1 accused a staff member of losing his potential winnings by revealing hints about how to maximize play to a novice gambler (see [Example 1.7](#)). In reality, revealing such hints do not affect the profitability of the slot machines, because the hints are only structural characteristics designed to increase the player's illusion of control (Griffiths & Parke, 2003). However, if the gambler perceives such an act to reduce their chance of winning then it could be deemed as interference to achieving an expected goal.

The observational data showed that verbal and physical aggression towards the slot machine also appeared to be forms of emotional aggression. Gamblers know that the slot machine is operated by a predetermined payout ratio. However, to attribute human characteristics to slot machines such as being sick (i.e., sadistic; see [Example 2.3](#)) or having the ability to cheat the gamblers (see [Example 2.2](#)), is evidence that the gambler is looking for something to attribute blame to for their negative mood state. Physical and verbal aggression towards the slot machine was most prevalent when the gamblers experienced feelings of frustration caused by their perception that the slot machine was acting unfairly. Aggressive acts towards the slot machine appeared to be most prevalent after *near misses* (see [Example 4.4](#)). Furthermore, near misses appeared to exacerbate feelings of frustration through being suggestive and teasing.

Although verbal aggression towards other gamblers may partly be caused by emotional aggression, the role of the payout ratio suggested that such aggression may also be instrumental. It was clear from the observa-

tional data that verbal aggression to other gamblers was primarily evident when the person gambling believed the other gambler was acting competitively and/or making hostile actions against them. Perhaps such aggressive behaviour is justified when considering that some gamblers (i.e., sharks) are operating in this manner (i.e., some are indeed acting in a predatory fashion by looking for players who have poor knowledge of how to operate a slot machine efficiently). However, these playing strategies appear to create paranoia, shown by the aggressive verbal expressions of the "victims," and instrumental aggression in the arcade environment. For example, P1 perceived that other gamblers wanted to recoup the money that he put into the machine when they clearly were not acting in a predatory fashion: "You get them away from me, they want this machine" (see [Example 3.2](#)).

Losing when playing a slot machine, undoubtedly creates negative affect. When a gambler watches another gambler recoup "their" money, the gambler may feel aggressive towards the other gambler. Furthermore, the psychological discomfort during such a gambling experience will often lead those who have been affected to be more offensive during the next gambling experience. Identifying with the aggressor (Freud, 1946) is the easiest way to avoid being a "victim" of such slot machine playing strategies in the future. In effect, even those who first entered the slot machine arcade being indifferent to the environment are reinforced to become competitive and hostile.

Observations demonstrated that the most of gamblers who acted aggressively, entered the arcade in positive moods (see [Examples 5.1](#) and [5.2](#)). It could therefore be speculated that it was the gambling behaviour and its outcomes that were primarily responsible for the aggressive behaviour. It also suggests the specific antecedents that create specific aggressive reactions. Perhaps more importantly, it suggests that these gamblers have failed to learn from previous gambling experiences. Despite the majority of gamblers consistently losing money on slot machines they still return to play them.

The observational data also showed that positive mood states among the participants were common after winning back losses (see [Examples 6.1](#) and [6.2](#)). In such "recoveries," the gamblers rarely recouped all of their losses or made a profit. This suggests that their positive mood was induced by great relief, and therefore the negative consequences of losing must be considerable. Participants enjoyed winning back losses without actually making any profits, implying that these participants also enjoy the competitive experience. This may be a factor in facilitating excessive gambling as recent research has demonstrated that problem gamblers are significantly more likely to be competitive than non-problem gamblers (Parke, Griffiths, & Irwing,

in press). Furthermore, this experience of positive affect could be motivated by the removal of aggressive emotions through the reduction of frustration. Even though they did not make any profits, gamblers could perceive the goal as being achieved because they obtained the minimum payout percentage (at least three-quarters of the money they put in). Expectation levels of gamblers are often based on the payout percentage of the slot machine.

Another interesting observation was that the gamblers employed positive thinking strategies after losing (see Examples 7.1, 7.2, and 7.3), most probably to sustain self-esteem after losing the competitive game. Losing in the arcade is likely to be embarrassing and frustrating when acknowledging that other gamblers have been watching, and waiting to profit from their loss. Positive thinking strategies are instrumental in repressing feelings of negative affect according to psychoanalytic theory (Freud, 1946). In the context of gambling, Parke et al. (2003) suggested the use of positive thinking strategies is a maladaptive coping strategy that only encourages gambling persistence. These positive thinking strategies may be responsible for the participants being unable to learn from punishment cues in gambling.

Since the study was exploratory in nature, the results are somewhat limited and should be treated with caution. However, what is clearly shown than gambling-induced aggression in the arcade is a reality and warrants further research. Research is needed to evaluate the generalizability of the results to other UK arcades. Using other forms of qualitative research, such as case studies, other important themes of gambling-induced aggression which have gone unnoticed during the observation periods may be extracted. Nevertheless, these preliminary findings are encouraging.

One of the overall aims of this research into gambling-induced aggression was to increase understanding of the dynamics of the relationship between gambling and aggression. From the results of this study, slot machine gamblers must learn to accept responsibility for incurred losses. Acknowledgement of liability and removal of punishment reduction cues through correcting maladaptive positive thinking strategies may decrease problem gambling. Not attributing losses to external factors (e.g., "sadistic" slot machines and arcade staff) and acknowledging the probability of slot machine gambling over a continuous period (essentially seeing the behaviour as completely dysfunctional), may be a key theme in therapy when dealing with slot machine addiction. Cognitive-behavioural therapy, such as *audio-playback therapy* (Griffiths, 1995), may be instrumental in this case. Part of the problem of gambling-induced aggression is the fact

that many of the gamblers appear to be unaware of how extreme and inappropriate their behaviour is. It is probable that listening or viewing their dysfunctional behaviour may be a deterrent for performing an activity that allows one to lose self-control to such an extreme.

References

- Berkowitz, L. (1989). The frustration-aggression hypothesis: Examination and reformulation. *Psychological Bulletin*, 106, 59-73.
- Berkowitz, L. (1993). *Aggression: Its causes, consequences, and control*. Philadelphia: Temple University Press.
- British Psychological Society. (2000). *Code of conduct, ethical principles and guidelines*. Retrieved April 3, 2004, from <http://www.bps.org.uk/documents/Code.pdf>.
- Dollard, J., Doob, L. W., Miller, N. E., Mowrer, O. H., & Sears, R. R. (1939). *Frustration and aggression*. New Haven, CT: Yale University Press.
- Freud, A. (1946). *The ego and the mechanisms of defence*. New York: International Universities Press.
- Griffiths, M. D. (1994). The role of cognitive bias and skill in fruit machine gambling. *British Journal of Psychology*, 85, 351-369.
- Griffiths, M. D. (1995). *Adolescent gambling*. London: Routledge.
- Griffiths, M. D., & Parke, J. (2003). The psychology of the fruit machine. *Psychology Review*, 9, 12-16.
- Lorenz, V., & Shuttleworth, D. (1983). The impact of pathological gambling on the spouse of the gambler. *Journal of Community Psychology*, 11, 67-76.
- Muellemann, R. L., DenOtter, T., Wadman, M. C., Tran T. P., & Anderson, J. (2002). Problem gambling in the partner of the emergency department patient as a risk factor for intimate partner violence. *Journal of Emergency Medicine*, 23, 307-312.
- National Coalition Against Legalized Gambling. (2003). *The explosive growth of gambling in the United States*. Retrieved July 16, 2004, from <http://www.ncalg.org/info/explosivegrowth.htm>.
- Parke, A., & Griffiths, M. D. (2003, May). *A study of aggressive behaviour in adult slot machine gamblers*. Paper presented at the 12th International Conference on Gambling and Risk-Taking, Vancouver, Canada.
- Parke, J., & Griffiths, M. D. (2002). Why are slot machine gamblers so hard to study? *Electronic Journal of Gambling Issues*, 6. Retrieved May 29, 2004, from <http://www.camh.net/egambling/issue6/opinion/index.html>.
- Parke, A., Griffiths, M. D., & Irwing, P. (in press). Personality traits in pathological gambling: Sensation seeking, deferment of gratification and competitiveness as risk factors. *Addiction Research and Theory*.
- Parke, J., Griffiths, M. D., & Parke, A. (2003, May). *A new typology of British slot machine players*. Paper presented at the 12th International Conference on Gambling and Risk-Taking, Vancouver, Canada.
- Zillman, D. (1988). Cognition-Excitation interdependence in aggressive behavior. *Aggressive Behavior*, 14, 51-64.

Appendix

Description of the Coding System

The first author spent two sessions observing the behaviour within the gambling arcade, in a non-discriminate approach. This determined whether aggressive behaviour was in fact prevalent in the arcade. During a further six observational sessions, the first author recorded every type of aggressive behaviour witnessed and separated these into very narrow subgroups outlined below.

Verbal Aggression:

- To the machine while losing
- To the machine after a near winning experience (known as a “near miss”)
- To opposing gamblers (unmotivated)
- To opposing gamblers who were believed to be waiting to play on “their” machine
- To opposing gamblers when “their” machine was taken (known as “back stabbing”)
- To friends who would not lend the gambler money after losing
- To arcade staff who were not providing change (i.e., money) fast enough
- To arcade staff who were helping opposing gamblers
- To arcade staff when they were losing
- To management when they were losing
- To management when they refused to “save” the machine for them (to let them go get more money to avoid being back stabbed)

Physical Aggression:

- To machine while losing
- To machine after a near miss (see above)
- To a machine when they had been backstabbed (see above)
- To the machine after they used up all their funds
- To management/arcade staff after losing (not observed-but given anecdotal evidence of such events-told to be very rare, e.g., once every few months)

While undertaking the pilot work it became very obvious during busy periods it would be difficult to determine motivation for every instance of aggressive behaviour. Therefore instead of speculating motivation the first author simply recorded the behaviour in normative terms. For example, the narrow subgroups were pooled together with motivation and antecedents removed:

- Verbal aggression towards staff
- Verbal aggression towards other gamblers
- Verbal aggression towards slot machine
- Physical aggression towards slot machine
- Physical aggression towards other slot machine gamblers

The observation periods were separated into one-hour segments. It was evident that one-hour segments were the most appropriate unit to record the data, given prevalence rates estimated from pilot observations. At the beginning of every hour, the total number of gamblers in the arcade was recorded. During the observation sessions, the frequency of each of the five types of aggressive behaviour was recorded using a frequency chart.

Received September 16, 2004
Accepted November 25, 2004 ♦